

R. G. Mason, M.D., Ph.D.
Department of Pathology
School of Medicine
University of North Carolina
Chapel Hill, North Carolina 27514

Effects of Nicotine on Interactions of Platelets and Endothelial Cells.

The effect of nicotine upon the interaction of platelets in plasma or of isolated platelets with endothelial cells will be investigated. In addition, the effect of nicotine on platelet-platelet interaction and upon endothelial cell-endothelial cell interaction will be investigated. Aggregations of platelets is an initial step in thrombus formation. Adhesion of platelets to the endothelial cells could constitute one of the earliest steps in thrombus formation. Interaction of platelet aggregates with endothelial cells could produce alterations in endothelium leading to promotion of thrombosis. Investigation of the interactions of endothelial cells and platelets should lead to a better understanding of the roles of these cell types in thrombosis. Studies of the influence of nicotine upon these cellular interactions should clarify understanding of possible effects of smoking on thrombosis.

Platelets will be obtained from healthy donors. Endothelial cells will be obtained from the umbilical cord vein and will be used directly or after growth in tissue culture. Platelets will be mixed with endothelial cells in an aggregometer in the presence and absence of varying concentrations of nicotine. Cellular interactions will be followed by photometry, phase-contrast microscopy and electron microscopy. Release of substances from platelets or endothelial cells which promote or inhibit cellular interactions will be sought.

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